The Texas streams were unusually low throughout the month, and no rises of consequence occurred. The Guadalupe, the middle Colorado, and the middle Brazos were the lowest of record for October.

MISCELLANEOUS.

Frosts.—Killing frosts occurred at the higher northern stations in New Mexico from the 6th to 8th, but a general killing frost did not occur over the northern counties until the 16th, and over the central and southern counties until the 22d. In the Texas area the first general frost was delayed until the 22d, although in a few northwestern and western localities the first frost of the season occurred on the 20th or 21st. The frost of the 22d was killing in northwestern and western counties, and heavy to light in northeastern, eastern, and southern counties. There was no frost, however, in the lower Rio Grande Valley and along the Gulf coast.

Local storms.—A destructive wind and rainstorm occurred at Eagle Pass, Tex., at 10 p. m. of the 12th. It was preceded by much sultry weather. The storm came from the west and the wind blew at an estimated velocity of 50 miles per hour. The accompanying precipitation was torrential, 6.75 inches falling in about 8 hours. A reservoir valued at $15,000 was demolished, and 300 houses in Porfirio Diaz, Mex., across the Rio Grande, were washed away, rendering 1,500 people homeless.

A violent local storm, probably tornadic in character, occurred at Thelma, Tex., on the 30th, and demolished the schoolhouse, several dwellings and barns, and injured two farmers, who were blown from their wagons. Trees were uprooted and all crops in the path of the storm were destroyed.

THE FLOOD IN THE RIO GRANDE.

By FREDERICK H. BRANDENBURG, District Forecaster.

Torrential rains over the drainage basin of the Rio Grande from its head in the San Juan Mountains almost to El Paso, Tex., on the 4th and 5th of October, 1911, caused a severe flood in its upper reaches and very high water for several days in the lower part of the river.

The San Luis Valley is rarely visited by heavy rains; in fact this region is one with the lightest rainfall in Colorado. While heavy precipitation occurs nearly every year over the higher part of the watershed, it comes principally in winter in the form of snow, and such freshets as occur result from a too rapid melting of the snow. As a rule little or no damage results from this cause in the upper part of the drainage basin.

The rainfall on the 4th and 5th was heavy. At Wagon Wheel Gap Experiment Station, maintained by the Weather Bureau in cooperation with the Forest Service, elevation 9,235 feet, rain began at 5 p. m. October 4 and continued steadily until 4 p. m. of the 5th, after which light rain fell until midnight of the 5th. The total fall at the station was 2.65 inches, while near by at the mountain top station, elevation 10,956 feet, the total fall was 3.62 inches, showing a marked increase with elevation. Mr. Peter Keplinger, of the Forest Service, in crossing the Continental Divide, from the San Juan country, found trees estimated at 50 years old uprooted by the flood in small ravines. In the northern part of the San Luis Valley the precipitation was not excessive, but in Costilla County, on the east side of the Rio Grande, the amounts ranged from 1.90 at San Luis to 3.13 inches at Blanca. The rainfall was very heavy also along the Conejos, the most important tributary of the Rio Grande in Colorado; at Platoro, on the upper part of this watershed, the rainfall for the two days was 3.30 inches. The average rainfall, at five stations along the Chama in north-central New Mexico was 2.95 inches, with the greatest amount, 4.34 inches, at Cumbres Pass, near which place the Chama has its beginning. Heavy rainfalls also occurred along the trunk stream as far south as the center of the State.

The damage was mostly confined to San Luis Valley, the destruction beginning in the upper part of the valley. Towns were inundated, bridges, houses, and barns were carried away, but there was no loss of life. The ranchmen were heavy losers, but the principal damage was to the railroad. Practically all wagon bridges were washed away and the roads left in an impassable condition.

The loss, exclusive of that sustained by the railroad, is estimated at about $100,000.

In Rio Grande County 8 wagon bridges were washed away, 5 miles of railroad track ruined and about 50 miles damaged, and hundreds of head of cattle and hogs were lost. The river spread out, and in places was from 2 to 4 miles wide. The State bridge above South Fork withstood the flood, but one steel bridge was carried out and also the State bridge under construction at Seven-Mile Plaza. In Alamosa the principal damage resulted from the breaking of a dike and the inundation of 30 city blocks.

The Conejos, which joins the trunk stream near Antonita, carried away tons of hay and field peas and acres of potatoes, besides drowning large numbers of live stock. All the bridges along the Conejos and Alamosa were carried out.

In New Mexico where the river bed of the trunk stream is of greater capacity, the damage was not so serious, the flood not reaching the proportions of that of last July. The breaking of the river bank about 28 miles above El Paso caused a damage of about $4,000. About 25 miles below El Paso the water encroached on the Galveston, Harrisburg & San Antonio Railroad right of way, necessitating much reinforcing of the roadbed.

At Espanola the highest stage, 8.4 feet, occurred on the 6th; at San Marcial, 14.3 feet, on the 7th; and at El Paso, 16.5 feet, on the 13th.